ARTER & HADDEN

ATTORNEYS AT LAW

founded 1843

Cleveland
Columbus
Dallas

1801 K Street, N.W. / Suite 400K
Washington, D.C. 20006-1301
202/775-7100 *telephone*
202/857-0172 *facsimile*

Irvine
Los Angeles
San Francisco

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Federal Communications Commission
Office of Secretary

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Direct Dial: (202) 775-7123
Internet Address: wkeane@arterhadden.com

February 27, 1997

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
Room 222
1919 M Street, N. W.
Washington, D. C. 20554

Re: IB Docket No. 95-91
Gen Docket No. 90-357
Ex Parte Presentation

Dear Mr. Caton:

This is to advise that today Sheldon R. Bentley of The Boeing Company; Daniel R. Bilicki of Textron, Inc.; and the undersigned, representing the Aerospace & Flight Test Radio Coordinating Council, met with Julius Genachowski of the Chairman's Office; Rudolfo M. Baca of Commissioner Quello's office; Jane Mago of Commissioner Chong's office and David R. Siddall of Commissioner Ness' office regarding the above-referenced proceedings. The points discussed during the meeting are reflected in the attached material.

An original and three copies of this letter, with enclosures, is supplied for inclusion in the Commission's docket files.

Sincerely,

William K Keane

William K. Keane
Counsel for Aerospace & Flight Test
Radio Coordinating Council

cc: Julius Genachowski
Rudolfo M. Baca
Jane Mago
David R. Siddall

THE L-BAND ALLOCATION FOR FLIGHT TESTING CONTINUES TO SERVE THE NATIONAL INTEREST

Aerospace & Flight Test Radio Coordinating Council ('AFTRCC") submits this statement regarding the continued importance of the L-band spectrum allocation for flight testing.

BACKGROUND

The L-band (1435-1525 MHz) is critical to the global competitiveness of the U.S. aerospace industry.

- The L-band represents the principal spectrum resource for testing new and modified aircraft.
- The telemetry afforded by this spectrum allocation enables aircraft manufacturers to expedite the flight test process. Data can be evaluated on a real-time basis by ground engineering personnel. The flight test process is shortened; productivity is enhanced.
- Aerospace exports are a major contributor to our balance of trade.
- The aerospace industry faces intense competition from foreign manufacturers, many of which are state-subsidized.

The L-band is critical to flight test safety.

- By means of L-band telemetry, ground engineers are able to continuously monitor the performance and stability of an aircraft under test. Critical data points include stress loads on control surfaces, fluid pressures, and engine temperatures, to name just a few of many such items. In the event engineers detect a potentially dangerous condition, the telemetry enables them to warn the aircrew and prescribe corrective measures.

The L-band is critical to national security.

- Virtually every new or modified U.S. weapons system is tested in whole or in part using L-band frequencies.
- These programs include F-15, F-16, F/A-18 E/F, V-22 and B-2, to name a few, as well as numerous missile programs.

DISCUSSION

Consumer Electronics Manufacturers Association ("CEMA") has argued that the Commission should re-open the S-band Digital Audio Radio Service ("DARS") allocation issue based on the notion that its tests reveal S-band to be materially inferior to L-band (1452-1492 MHz), as well as VHF or UHF. CEMA cites the FCC's Pioneer's Preference Review Panel report in support of this conclusion. There is no merit to this notion.

The DARS allocation is a closed issue.

- Prior to the 1992 World Administrative Radio Conference ("WARC") the FCC and the Executive Branch closely examined the question of a suitable allocation for DARS and other Services.
- The FCC and the Executive Branch concluded that DARS should be accommodated at 2310-2360 MHz ("S-band"), spectrum which had previously been available for flight testing. An L-band allocation for DARS was rejected in favor of continued use of this band for flight testing.

- That position was ratified in the Final Acts of the 1992 WARC for the United States.
- U.S. policy has been unwavering in favor of S-band for DARS ever since.

CEMA's technical arguments are misleading.

- CEMA's citations to the FCC's Pioneer's Preference Review Panel report are misleading. The Panel was not asked to review L-band, only S-band applications. No conclusions can be drawn from the report about the relative merits of L versus S.
- In any event, there is no material difference in propagation between L- and S-band. This has been known for years. More specifically, it was known at the time the U.S. opted for S-band.
- Administrations with much of the world's population (e.g. China, Japan, and Russia, to name a few) have supported an allocation for DARS even higher in the spectrum, i.e. at 2535-2655 MHz.

Loss of 40 MHz from the L-band would adversely affect aerospace productivity and national security, as well as flight test safety.

- Flight testing would have to be conducted at night, or flight test programs extended. The former would compromise safety (flight testing is normally conducted only in daylight hours); the later would add significantly to weapons system development costs.
- A "small" flight test program typically costs in excess of $1 million per day and can last for a year or more. Loss of 40 MHz would increase costs on the order of $225 million per year at one base alone. Moreover, flight tests in the Southwestern U.S. must be coordinated among a number of ranges such as Edwards AFB, China Lake,

and Vandenburg AFB, to name a few; delays in test schedules at one facility would cause cascading delays at other facilities, and vice versa.

- In terms of equipment costs, data is available for an analogous situation. In the early '70s flight test agencies and aerospace companies converted from the P-band (225-260 MHz) to the L-band. Costs for that conversion are estimated to have been on the order of $150 million in 1969 dollars. This would represent $641 million in 1996 dollars -- without <u>any</u> allowance for the increased number of test ranges operating today, or for the vastly increased data rates/bandwidth demands involved in flight testing.
- If the spectrum loss were more than 40 MHz, say 70 MHz of the available L-band spectrum, the impact would be even more severe, especially given the loss of 50 MHz of S-band spectrum re-allocated for other services including DARS.

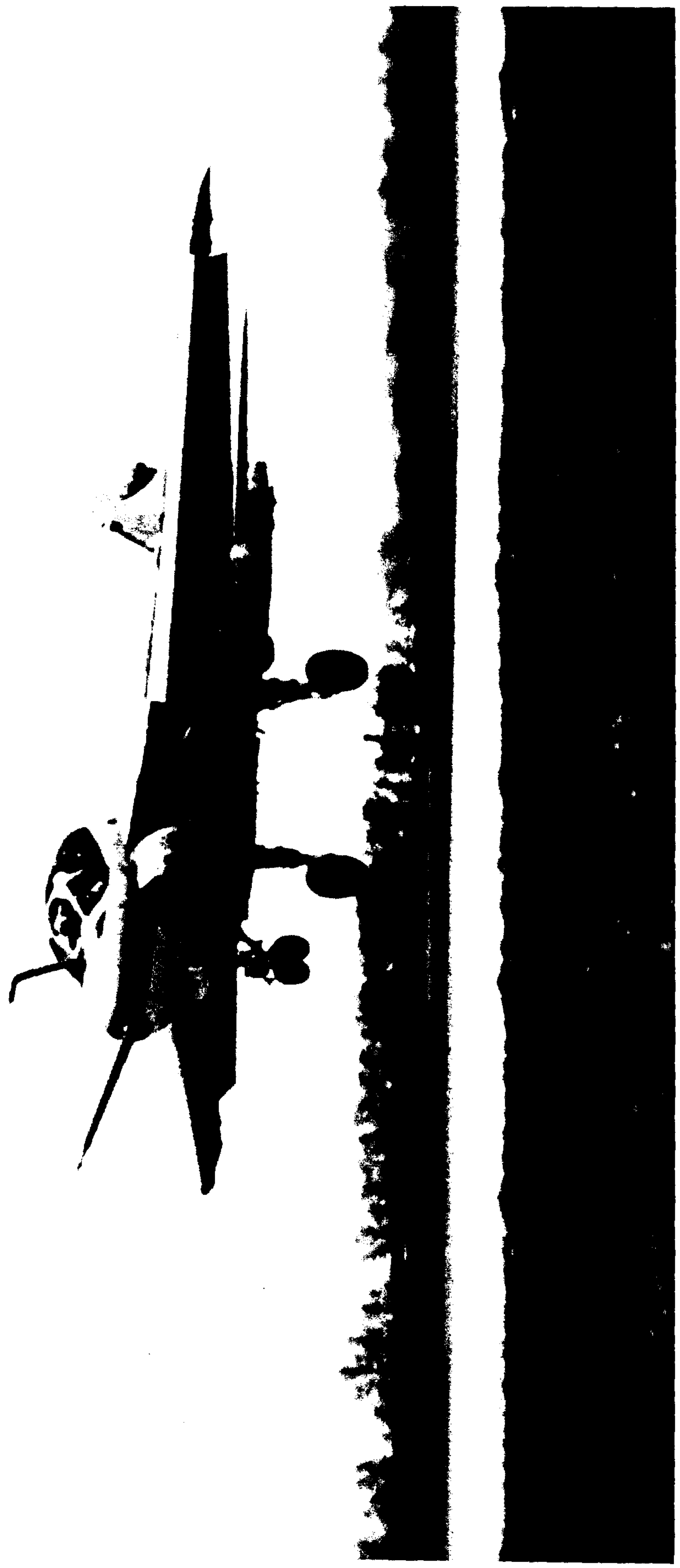
The demand for telemetry spectrum is growing at an exponential rate.

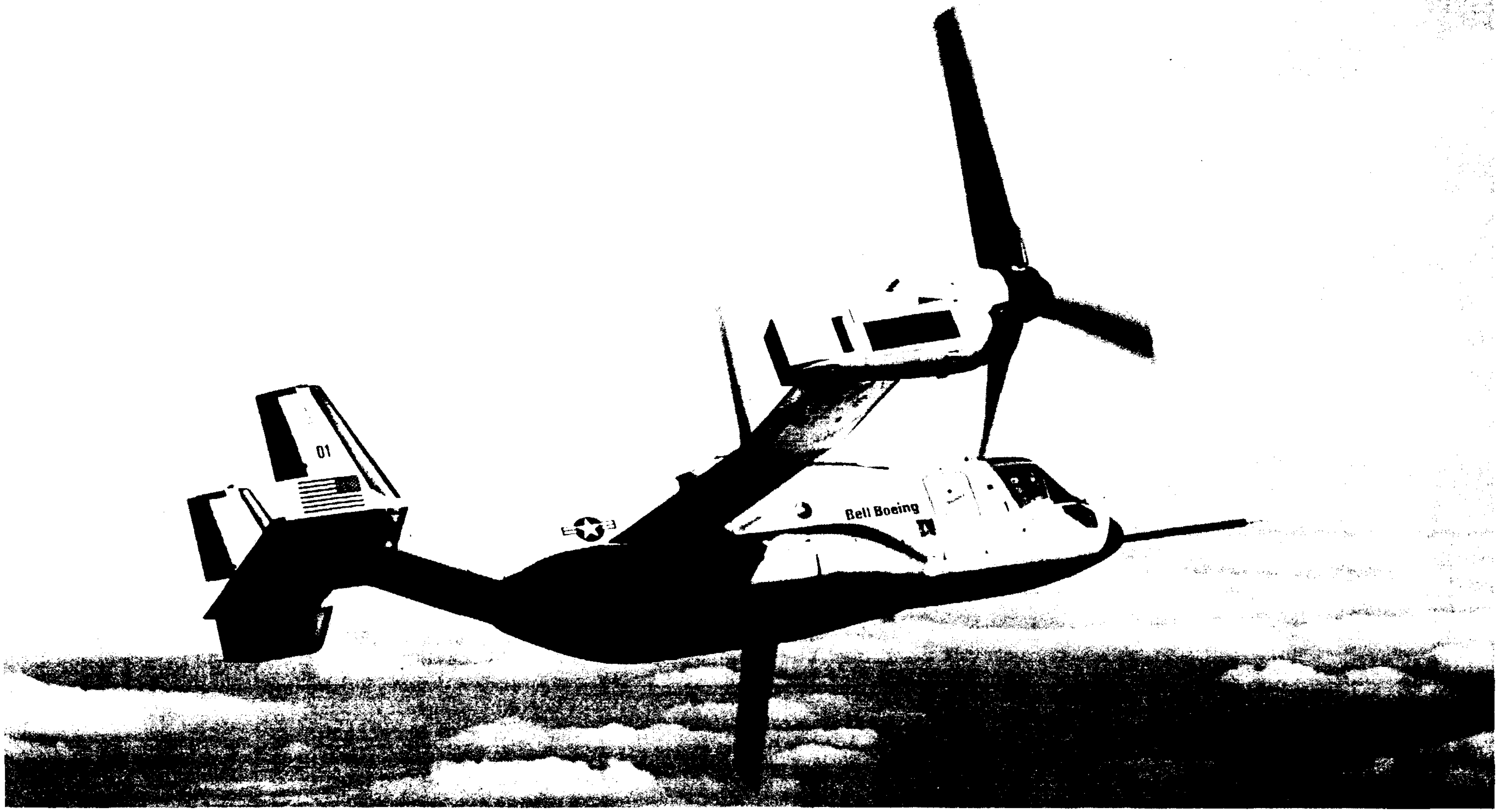
- The computerization of aircraft electronics and control systems, and the use of video, has significantly increased demands for telemetry spectrum. This will further increase with development of fly-by-light technologies.
- Ten years ago the average telemetry transmitter bandwidth was less than 1 MHz. Today the average is 3 MHz with an increasing trend toward 5 MHz as the norm. Wideband video requirements involve 10 MHz channels.
- When the Boeing 707 was flight tested four decades ago, approximately 300 data points were monitored. When the new 777 was flight tested, over 60,000 data points were monitored.

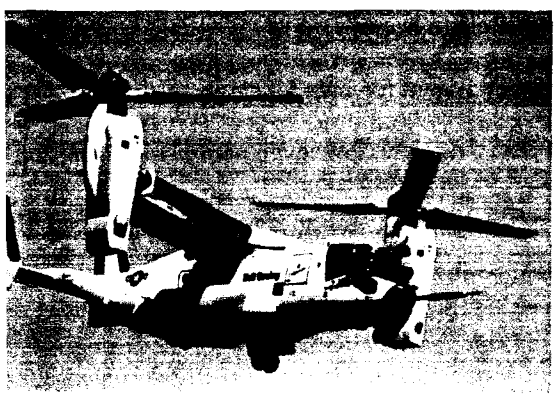
CONCLUSION

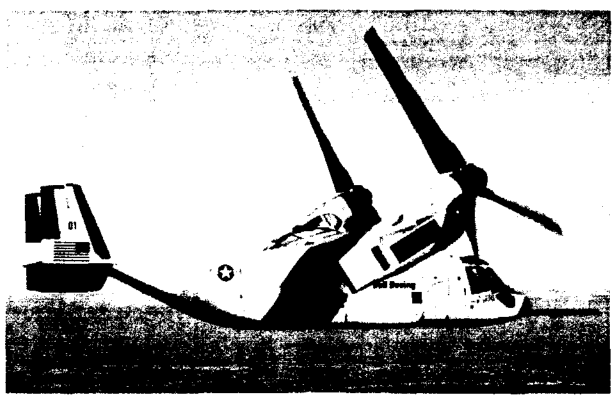
Loss of 40 MHz from the L-band would adversely affect one of the nation's most advanced, high technology industries -- an industry which competes on a global scale against strong, often state-subsidized manufacturers. Loss of 40 MHz from the L-band would seriously weaken the industry's competitiveness.

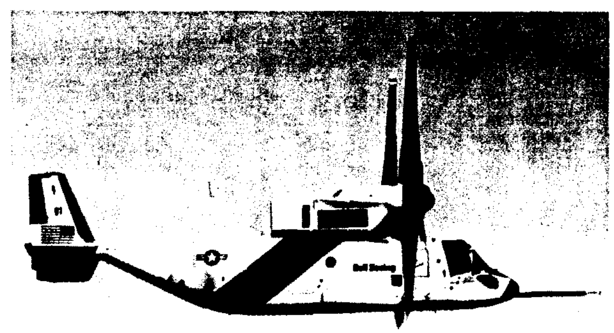

777
BOEING 777







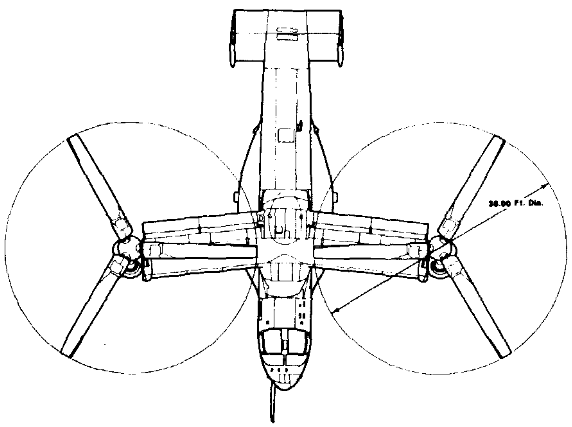




EING
Tiltrotor Team
ERVICE PROGRAM

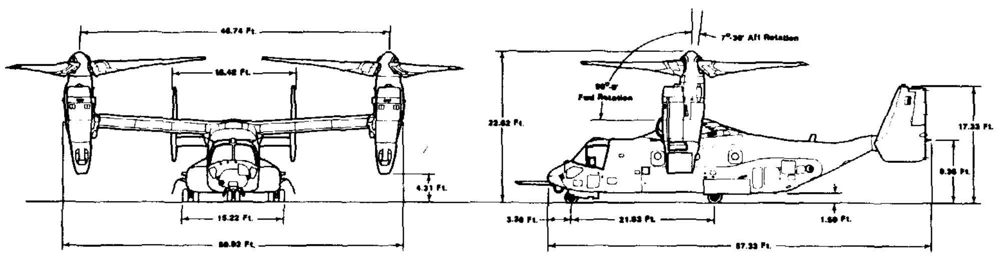
V-22 Osprey Joint Service Aircraft

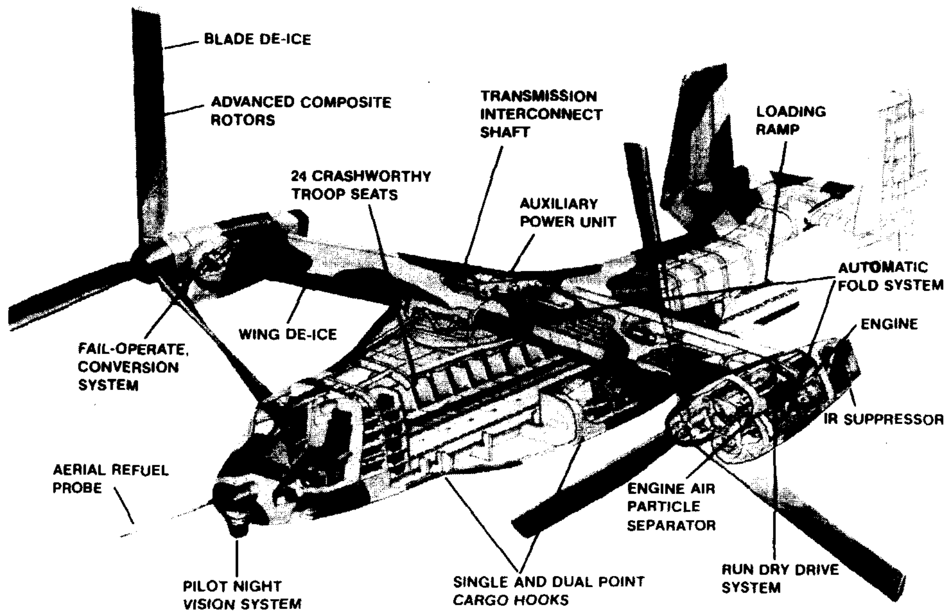
V-22 Osprey Joint Service Aircraft



Aircraft Characteristics

Spread	
Length	57′ 4″
Width	84′ 7″
Height	22′ 7″
Folded	
Length	62′ 7″
Width	18′ 5″
Height	18′ 1″
Take-Off Weights	
VTOL/STOL	55,000 lb.
Self Deploy STO	60,500 lb.
Fuel Capacity	2015 gal.





MISSIONS

U.S. Marine Corps — MV-22

Amphibious assault transport of troops, equipment and supplies from assault ships and land bases.

U.S. Navy — HV-22

Strike Rescue, delivery and retrieval of special warfare teams, and logistics transportation in support of the fleet.

U.S. Air Force — CV-22

Long Range special operations missions, insertion and extraction of special forces teams and equipment at mission radii in excess of 500NM.

U.S. Army — MV-22

Aeromedical evacuation, special operations, long range combat logistics support, combat air assault and low intensity conflict support.

DESCRIPTION

—Two 38 foot rotor systems
—Powered by two Allison T406-AD-400 engines — 6150 SHP each
—Operates as a helicopter when taking off and landing vertically
—Nacelles rotate 90 degrees forward once airborne, converting the aircraft into a turboprop airplane.
—Speeds from hover to 300 knots
—Transmission interconnect shaft in case of an engine failure
—Folds for stowage aboard ship
—70% composite construction
—Crashworthy troop and crew seats
—Two 10,000 lb. external cargo hooks
—Rescue hoist
—Cargo winch and pulley system for internal cargo loads
—Aft loading ramp
—Capable of all weather, day/night, low-level, nap-of-the-earth flight
—Continuous operation in moderate icing
—Inflight refueling
—Ballistic tolerant
—Self-deployable world-wide

DEVELOPMENT

First Flight	1989

BELL BOEING 609
TEXTRON

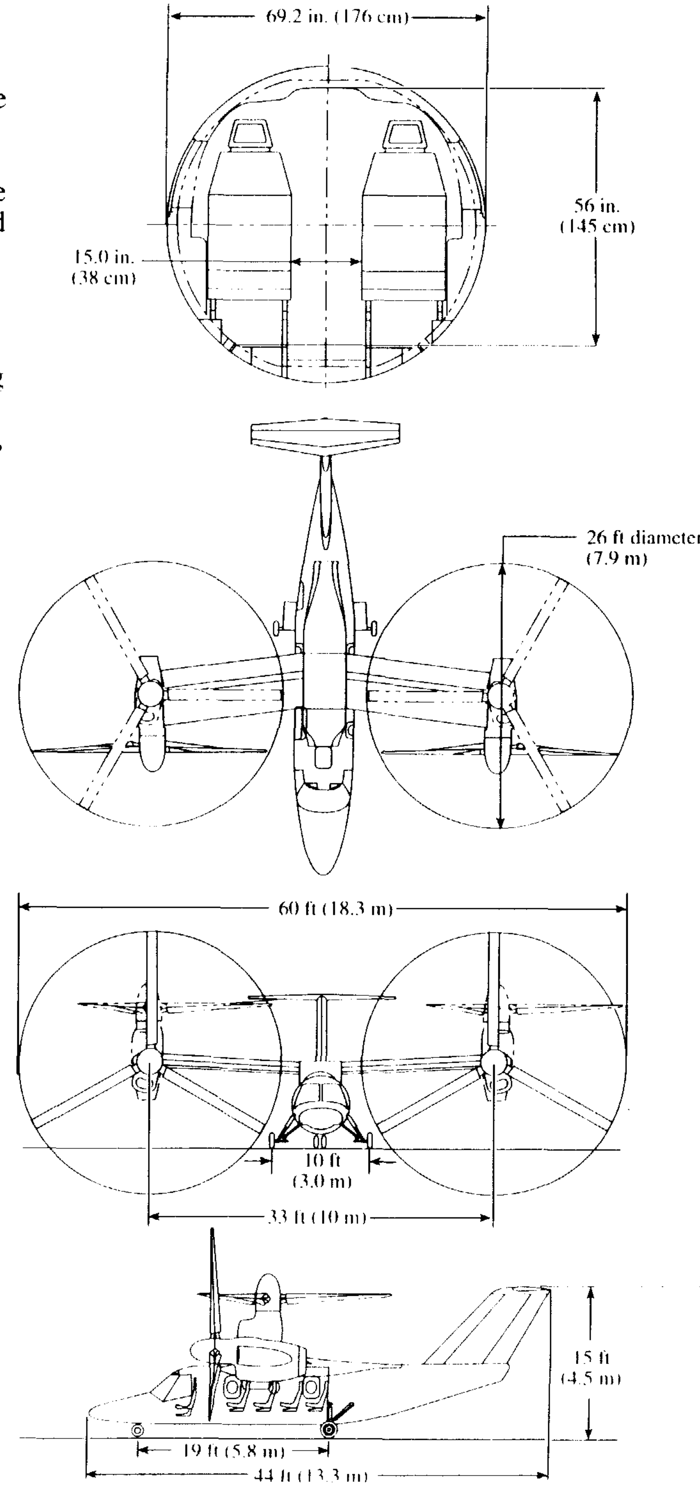
CIVIL TILTROTOR

Bell Boeing 609 Civil Tiltrotor Aircraft

The Bell Boeing 609 is a 6-9 passenger transport aircraft that combines the speed and range of a turboprop airplane with the vertical takeoff and landing capability of a helicopter. Designed from the outset for low maintenance and maximum operational flexibility, the civil tiltrotor will offer operators highly cost-effective, point-to-point transportation at cruise speeds up to 275 knots and at ranges up to 750 nautical miles. The aircraft can be configured for VIP/executive transportation, natural resource exploration, medical transportation as well as search and rescue, law enforcement, maritime surveillance, training, and other civil/government applications.

The Bell Boeing 609 will be pressurized and certified for instrument flight into known icing conditions and features composite materials construction, an advanced glass cockpit, and digital flight controls. These advanced technologies will provide new levels of performance, reliability and affordability to the commercial aviation world.

Dimensions	
Length overall	**44 ft**
Width overall	**60 ft**
Proprotor diameter	**26 ft**
Number of blades/rotor	**3**
Propulsion	
Powerplants (2)	**Pratt & Whitney PT-6 series Turboshaft**
Weights	
Maximum takeoff weight	**16,000 lb**
Empty equipped weight	**10,500 lb**
Useful load	**5,500 lb**
Capacities	
Required crew	**1-2**
Passenger seating	**6-9**
Baggage compartment	**55 cu ft**
Performance	
Maximum cruise speed	**275 kt**
Maximum range	**750 nmi**
Operational ceiling	**25,000 ft**
Cabin pressurization	**5.5 psi**



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Intermodal Transportation and Commerce Center

INTERMODAL TRANSPORTATION AND COMMERCE CENTER

An Intermodal Transportation and Commerce Center (ITCC) provides travelers convenient access to several forms of transportation at one central location. A strategically located ITCC will allow travelers to select the type of transportation that best suits their needs; rail, bus, automobile, light rail, vertical lift aircraft or any combination. ITCCs will be located on dual-use properties, that is, properties already devoted to transportation. Suggested sites for such centers include interconnected facilities in existing airports, over major highways, over or adjacent to conventional rail or light rail stations and adjacent to waterfronts. The anchor for such centers will be tiltrotor vertiports. Tiltrotor aircraft that are able to takeoff and land vertically and cruise at 300 miles per hour, will provide a short-haul air travel system (under 500 miles). This system will allow passengers convenient connection with the other modes of transport in a trip that avoids the necessity of using congested airports. Allowing these short-haul travelers to depart from such convenient intermodal centers will reduce congestion at the airport and expand the air transportation system capacity without physically expanding the airport.

These multi-level intermodal centers will enhance the value of the total transportation system. ITCCs will attract commerce and industry to the surrounding vicinity, create jobs, boost the local tax base and develop dormant land while protecting the environment.

ITCC Example Specifications

Size: 4-5 acres (landing surface)
Air Gates: 4
Ticketing: Yes
Baggage: Yes
Shopping: Yes
Offices: Yes

Multi-Mode Access: Yes
Food: Yes
Parking: Yes
Services: Yes
Hotel: Yes

For more information, contact:

Public Affairs Office
BELL HELICOPTER TEXTRON INC.
P.O. Box 482
Fort Worth, Texas 76101
(817) 280-6440